# Claims

We claim:

1.   A method for modem carrier drop detection comprising the steps of:

demodulating a received signal to provide signal data;

updating a carrier drop detection threshold based on the received signal responsive to a selected data pattern in the signal data; and

5   detecting a carrier drop based on the carrier drop detection threshold.

2.   A method according to Claim 1 wherein the modem uses a V.8 standard during startup and the step of updating comprises the step of updating the carrier drop detection threshold responsive to a selected data pattern in the signal data corresponding to at least one of a CM signal and a JM signal.

3.   A method according to Claim 1 wherein the updating step further comprises the steps of:

setting a flag to indicate receipt of at least one of a valid CM signal and a valid JM signal;

5   latching an output of a signal strength detector responsive to setting of the flag, the signal strength detector being coupled to the received signal and the output of the signal strength detector corresponding to a signal strength level of the received signal; and

setting the carrier drop detection threshold to a value a predetermined amount below the latched output of the signal strength detector responsive to setting of the flag.

4.   A method according to Claim 3 wherein the signal strength detector is a magnitude detector.

5.   A method according to Claim 3 wherein the signal strength detector is an energy detector.

6.   A method according to Claim 5 wherein the setting step further comprises the step of setting the carrier drop detection threshold to a level about 4 dB below

the latched output of the energy detector responsive to setting of the flag.

7. A method according to Claim 3 wherein the detecting a carrier drop step further comprises the step of detecting a carrier drop corresponding to a silence transmission terminating a V.8 standard phase 1 and wherein the detecting a carrier drop step is followed by the step of conditioning the modem to receive a phase 2 INFO0 signal.

8. A method according to Claim 7 wherein the conditioning step further comprises the step of starting a differential phase shift keyed (DPSK) receiver that receives the INFO0 signal.

9. A method according to Claim 3 wherein the step of setting a flag further comprises setting a predetermined memory location as the flag.

10. A method according to Claim 3 wherein the step of setting a flag further comprises the step of setting a latch output line to an active state.

11. A carrier drop detection system comprising:

a demodulator that demodulates a received signal to provide signal data;

a threshold circuit coupled to the demodulator that latches a carrier drop detection threshold at a level based on the received signal responsive to a selected data pattern in the signal data; and

a carrier drop detection circuit coupled to the threshold circuit that detects a carrier drop based on the carrier drop detection threshold.

12. A carrier drop detection system according to Claim 11 wherein the demodulator is a frequency shift keyed (FSK) demodulator.

13. A carrier drop detection system according to Claim 12 wherein the carrier drop detection circuit further comprises:

an energy detector having an output corresponding to an energy level of the

received signal, the output of the energy detector being latched responsive to the selected data

5    pattern in the signal data; and

      a comparator coupled to the output of the energy detector and to the carrier

drop detection threshold.

14.    A carrier drop detection system according to Claim 13 wherein the

threshold circuit further comprises a combiner coupled to the output of the energy detector

and an offset that outputs the carrier drop detection threshold as the latched output of the

energy detector reduced by the offset.

15.    A carrier drop detection system according to Claim 13 wherein the

threshold circuit further comprises a multiplier coupled to the output of the energy detector

and a coefficient that outputs the carrier drop detection threshold as the latched output of the

energy detector multiplied by the coefficient.

      A carrier detection system according to Claim 14 wherein the selected

data pattern in the data signal is at least one of a CM signal and a JM signal.

17.    A carrier drop detection system for a V.8 standard modem startup

sequence, the system comprising:

      a receiver circuit that receives a signal;

      a detector circuit coupled to the receiver circuit that detects at least one of a

5    CM signal and a JM signal from the received signal;

      a signal strength detection circuit coupled to the receiver that outputs a

received signal strength for the received signal;

      a threshold circuit coupled to the receiver circuit that latches a carrier drop

detection threshold based on a current value of the received signal strength responsive to

10   detection of at least one of the CM and the JM signal by the receiver circuit; and

      a comparator circuit coupled to the threshold circuit and the signal strength

detection circuit that compares the received signal strength to the carrier drop detection

threshold to detect a carrier drop corresponding to an end of the startup sequence.

18. A carrier drop detection system comprising:

means for demodulating a received signal to provide signal data;

means for updating a carrier drop detection threshold based on the received signal responsive to a selected data pattern in the signal data; and

5             means for detecting a carrier drop based on the carrier drop detection threshold.

19. A system according to Claim 18 wherein the modem uses a V.8 standard during startup and the means for updating comprises means for updating the carrier drop detection threshold responsive to a selected data pattern in the signal data corresponding to at least one of a CM signal and a JM signal.

20. A system according to Claim 18 wherein the means for updating further comprises:

means for setting a flag to indicate receipt of at least one of a valid CM signal and a valid JM signal;

5             a signal strength detector coupled to the received signal and having an output corresponding to a signal strength level of the received signal;

means for latching an output of the signal strength detector responsive to setting of the flag; and

means for setting the carrier drop detection threshold to a value a

10        predetermined amount below the latched output of the signal strength detector responsive to setting of the flag.

21. A system according to Claim 20 wherein the signal strength detector is a magnitude detector.

22. A system according to Claim 20 wherein the signal strength detector is an energy detector.

23.    A system according to Claim 22 wherein the means for setting further comprises means for setting the carrier drop detection threshold to a level about 4 dB below the latched output of the energy detector responsive to setting of the flag.

24.    A system according to Claim 20 wherein the means for detecting a carrier drop further comprises means for detecting a carrier drop corresponding to a silence transmission terminating a V.8 standard phase 1 and further comprising means for conditioning the modem to receive a phase 2 INFO0 signal.

25.    A system according to Claim 24 wherein the means for conditioning further comprises means for starting a differential phase shift keyed (DPSK) receiver that receives the INFO0 signal.

26.    A system according to Claim 20 wherein the means for setting a flag further comprises means for setting a predetermined memory location as the flag.

27.    A system according to Claim 20 wherein the means for setting a flag further comprises means for setting a latch output line to an active state.

28.    A computer program product for carrier drop detection, comprising:
       a computer readable storage medium having computer readable program code means embodied therein, the computer readable code means comprising:
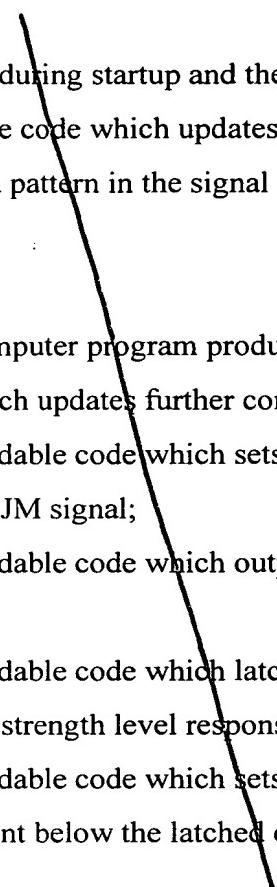       computer readable code which demodulates a received signal to provide signal data;
       computer readable code which updates a carrier drop detection threshold based on the received signal responsive to a selected data pattern in the signal data; and
       computer readable code which detects a carrier drop based on the carrier drop detection threshold.

29.    A computer program product according to Claim 28 wherein the

modem uses a V.8 standard during startup and the computer readable code which updates comprises computer readable code which updates the carrier drop detection threshold responsive to a selected data pattern in the signal data corresponding to at least one of a CM

5  signal and a JM signal.

30.    A computer program product according to Claim 18 wherein the computer readable code which updates further comprises:

computer readable code which sets a flag to indicate receipt of at least one of a valid CM signal and a valid JM signal;

5          computer readable code which outputs a signal strength level of the received signal;

computer readable code which latches the output of the computer readable code which outputs a signal strength level responsive to setting of the flag; and

computer readable code which sets the carrier drop detection threshold to a

10  value a predetermined amount below the latched output responsive to setting of the flag.

31.    A computer program product according to Claim 30 wherein the computer readable code which outputs a signal strength level of the received signal outputs a magnitude.

32.    A computer program product according to Claim 30 wherein the computer readable code which outputs a signal strength level of the received signal outputs an energy level.

33.    A computer program product according to Claim 32 wherein the computer readable code which sets further comprises computer readable code which sets the carrier drop detection threshold to a level about 4 dB below the latched output responsive to setting of the flag.
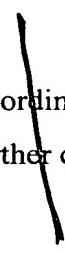
34.    A computer program product according to Claim 30 wherein the computer readable code which detects a carrier drop further comprises computer readable

code which detects a carrier drop corresponding to a silence transmission terminating a V.8 standard phase 1 and further comprising computer readable code which conditions the modem to receive a phase 2 INFO0 signal.

35.    A computer program product according to Claim 34 wherein the computer readable code which conditions further comprises computer readable code which starts a differential phase shift keyed (DPSK) receiver that receives the INFO0 signal.

36.    A computer program product according to Claim 30 wherein the computer readable code which sets a flag further comprises computer readable code which sets a predetermined memory location as the flag.

37.    A computer program product according to Claim 30 wherein the computer readable code which sets a flag further comprises computer readable code which sets a latch output line to an active state.